

Name _____

Air Pollution Lab

Part I: Testing pH

Using the pH meters provided, determine the **pH value** of each of the following samples and then classify each as an **acid, base, or neutral**.

Be sure to RINSE each pH meter off using the squirt bottle before putting it in the next sample.

Substance	pH	Acid, Base, or Neutral
Lemon Juice		
Vinegar		
Cola		
Orange Juice		
Local Rain Water		
Tap Water		
Baking Soda		
Bleach		
Milk of Magnesia		
Cleaner		

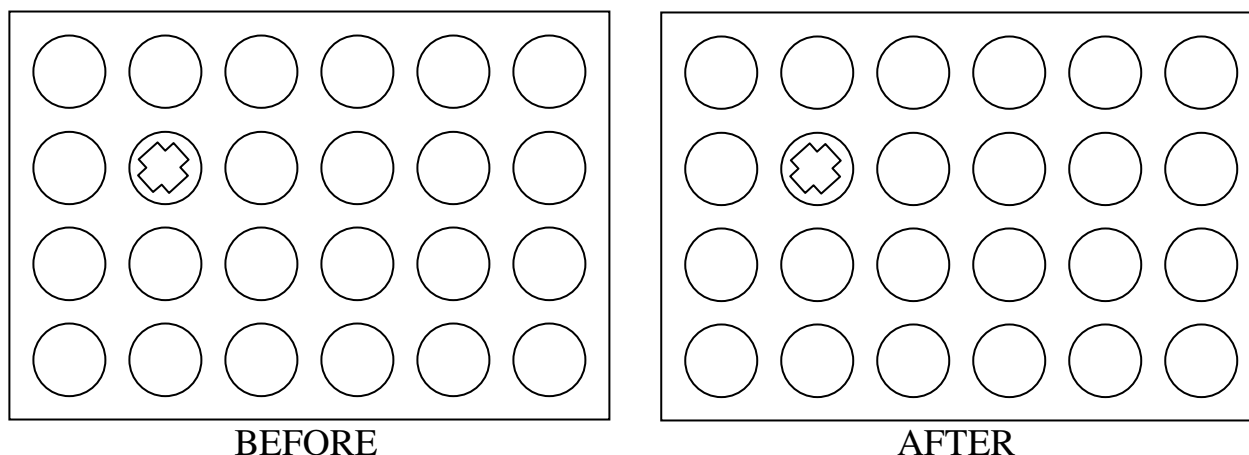
1. What was the most **acidic** substance you tested? _____
2. What was the most **basic** substance you tested? _____
3. What substance(s) was/were **neutral**, or closest to neutral? _____
4. At what pH is rain classified as “acid rain?”
(Hint: Use your notes to help. Remember, “normal” rain is slightly acidic.)
5. According to the pH level found above, would our local rain water be considered “acid rain?” EXPLAIN your answer.

Part II: Acid Rain

In this demonstration, you will observe a model of how pollution spreads throughout an ecosystem and analyze its effect on the pH of the water found there.

6. Use colored pencils to show the color of the indicator solution in each well before and after the “pollution” was produced.

Note: The “X” indicates the source of the “pollution.”



7. What does the change in color in the 4 corner wells indicate?

8. After the universal indicator was added to the water wells, what does the color in the water wells farthest from the “pollution” indicate?

9. After the universal indicator was added to the water wells, what does the color in the water wells closest to the “pollution” indicate?

10. How would acid rain affect actual bodies of water in an ecosystem and the plants and animals that live there?

In this demonstration, you will observe how unpolluted rain versus acid rain affects marble and apply your findings with real life applications.

Effect of “unpolluted rain” on marble chip	
Effect of “acid rain” on marble chip	

11. How do you think acid rain affects buildings and statues in cities (which may also be marble)? BE SPECIFIC!

12. How do you think acid rain can be prevented? BE SPECIFIC!

13. What did you learn from this lab about pH and acid rain? BE SPECIFIC!

Part III: CO₂, Smoke, and Acidic Gases in Air

- Fill the sampling container to the 10mL line with water. Come up to my desk to add 5 drops of bromthymol blue indicator solution to your water.
- Swirl the sampling container and record the color of the solution.
- Attach a 2 inch piece of tubing to the end of a syringe. Fill the syringe with outside air.
- Force the air out of the syringe through the tubing and into the bromthymol blue/water solution by depressing the plunger.
- Repeat step 3 TEN times and record your observations for Experiment C in the data table below. Note: Cap the container between each time.
- Rinse and dry the sampling container.

Bromthymol Blue pH Indicator

Yellow: pH of 6.0 or lower (acidic)

Green: pH of 7.0 (neutral)

Blue: pH of 7.6 or higher (slightly basic)

Contents of Solution	Color of Solution	pH of Solution	Acidic/Basic/Neutral
Original			
Experiment A CO ₂			
Experiment B Smoke			
Experiment C Outside Air			

14. What effect does CO₂ have on the pH of water in the atmosphere? (See Experiment A)

15. What effect does smoke have on the pH of water in the atmosphere? (See Experiment B)

16. Are the gases in our air acidic? EXPLAIN your answer using pH! (See Experiment C)